



UNITED STATES NAVY

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TABLE OF CONTENTS

MEDICAL DIGESTS

Management of Radiation	
Exposure Patients	3
Eaton Agent Pneumonia	7
Animal Genes and Pigment Cells .	9
Prognosis in Bell's Palsy	11
Hiccups	13
Oxygen Therapy Service-Addendum	14

MISCELLANY

Citation by Secretary of the Navy.	16
MSC Officer Honored	16
Assistant Chief Visits NAMRU-4 .	17
Pneumonia Research at NAMRU-4	17
Training in Medical Aspects of	
Advanced Warfare	18
Essay Contest of Naval Institute..	19
Directives	
Disinsection of Vessels	
(BuMed Inst 6250.2B)	19
Residency Training	
(BuMed Inst 1520.10B)	20
Hospital Food Service Program	
(BuMed 10110.2 Ch)	20
Career Incentive for Group X	
(BuMed Notice 1510)	20
Property Record Cards	
(BuMed Notice 7320)	20
From the Note Book	21

RESERVE SECTION

Opportunities for Training	23
Beneficial Results of Active Duty	
for Training	25

PREVENTIVE MEDICINE

Availability of Lyophilized	
Smallpox Vaccine	27
Diarrheal Diseases in the Navy .	27
Fatal Case of Lindane Poisoning	28
Safety of Malathion Dusting Powder	
for Louse Control	29
Epidemiology of Accidental	
Chemical Poisoning	30
Kala-Azar	32
Effect of Sabin Type 1	
Poliomyelitis Vaccine	34
Food Borne Outbreaks of Unknown	
Etiology	36

DENTAL SECTION

Open Letter to All Dental	
Personnel	37
Effect of Various Procedures on	
Human Dental Pulp	37
Studies on Inheritance of Dental	
Caries	38
Personnel and Professional Notes	39

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* * * * *

Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

The Clinical Evaluation and Management of
Radiation Accident Exposure Patients

CAPT E. R. King MC USN, Chief of Radiology, U.S. Naval Hospital;
Director, Department of Nuclear Medicine, U.S. Naval Medical School,
NNMC, Bethesda, Md. Radiology 77:77-82, July 1961.

In recent years, the danger of peacetime nuclear accidents has become so prevalent that most medical centers are faced with the responsibility of providing for care of individuals exposed to such mishaps. Some major accidents in the United States, or within its testing program, as well as in foreign countries, have already occurred.

The National Naval Medical Center, Bethesda, Md., has been designated as the Radiation Exposure Evaluation Center for the U.S. Navy. The following discussion is a resume of the present concept of an evaluation program for such cases.

Some definition of terms seems in order. The word "accident" refers to a situation in which personnel are known to be exposed to excessive doses of ionizing radiation. An "incident" is a situation whereby in any of the above situations, or perhaps in some not listed, personnel might have been exposed, but no definite evidence of such exposure can be proved at the site. The latter situation may be very important from a medicolegal standpoint.

Patient Evaluation at the Exposure Site

The Navy has established two Radiation Disaster Teams, the East Coast unit being stationed at the Explosive Ordnance Disposal Center, Indian Head, Md. The medical element of this team, staffed by the National Naval Medical Center at Bethesda, primarily serves in an advisory capacity to the command of the military establishment nearest the accident or incident. In case of an actual accident, possible procedures for this team are as listed in the following table:

Table I: Patient Evaluation at Accident Site

- I. Survey of accident site by Radiation Disaster Team; determination of type and severity of accident.
- II. Determination of possible types of exposure to individuals in the area.
- III. Determination of probable radiation exposure dose.
- IV. Segregation and evacuation of known exposure cases.
- V. Procurement of positive identification and permanent addresses of individuals at exposure site whose evacuation was not required. Follow-up studies on these persons are mandatory.

Patient Evaluation at the Hospital Admitting Room

Patients who are evacuated will be transported to the National Naval Medical Center, Bethesda, Md., where a separate ward is prepared for such cases.

Table II: Admission Room Management of Radiation Disaster Victims

I. Ambulatory Patients (uninjured)

1. Monitor patient with clothes on; if he is not obviously contaminated, allow him to leave the area temporarily for later consideration.
2. If contamination is detected, remove and dispose of clothing.
3. Refer patient to decontamination area for thorough washing under shower, with a detergent and scrub brush.
4. Dry in shower room.
5. Monitor outside shower room. If contamination is still present, repeat shower (clip hair, if necessary).
6. Dress patient in pajamas.
7. Send to area designated by doctor on duty.
8. Make sure the patient is available for further studies indicated by the type of exposure (low background total-body counting, hematological studies, radioassays of excreta).

II. Ambulatory Patients (injured)

1. If patient has first aid or temporary dressings, monitor as though he were uninjured.
2. If further first aid is needed, perform same.
3. If bandages or first-aid dressings that have been applied are soiled, it may be necessary to remove the top layers and monitor as previously stated.
4. If contaminated, remove his clothes, remonitor, and dress in pajamas. Carry out any emergency treatment required.
5. If grossly contaminated and the casualty can withstand a cleansing shower, perform this procedure; then dress him in pajamas and admit to the hospital. Perform additional studies as indicated by the type of exposure.

III. Stretcher Patients (noncritical)

1. Monitor patient. If he is not contaminated, remove clothing, dress in pajamas, and admit to hospital as probably a non-contaminated person.
2. If contaminated, remove clothing, take him to tub sink or tub bath, decontaminate as much as possible, dress in pajamas, and admit to hospital. Perform additional studies as indicated by type of exposure.

IV. Stretcher Patients (critical)

1. Administer necessary first aid.
2. Monitor as thoroughly as possible.
3. If the victim does not appear contaminated, treat as any other noncontaminated, critically injured stretcher patient; then admit to hospital.
4. If contaminated and in critical condition, wash surface area as much as possible and admit to hospital. Perform additional studies as indicated by type of exposure.

V. All representatives of the press will be referred to the Administrative

Officer. Patients and attending physicians, nurses, and technicians will not be subjected to interviews by the press.

The most logical method of making a prognosis in a radiation casualty is by the dose the patient has received, provided any reasonable estimate of such dosage is available.

Table III: Prognosis for Patients Exposed to External Radiation

- Group I: Survival probable—100-300 rem. Use supportive therapy as indicated. (Probably none will be needed.)
- Group II: Survival possible—300-750 rem. Major effort should be devoted to this group.
- Group III: Survival improbable —750 rem and upward. This group (750-1500 rem) may be saved by autologous bone marrow (perhaps homologous also). Doses over 1500 rem are likely to be fatal.

The rem is used as a dose unit in that the above doses are for all types of ionizing radiation, and are estimates of the absorbed dose of radiation.

As stated above, the dose and prognosis would depend, in part, on the type of accident. Thus, as can be seen in Table IV, a "general" or "induced" type of exposure, or a mixture of these types, would allow a greater volume of tissue to be damaged by absorbed radiation than would a "superficial" exposure.

Table IV: Types of Exposure

- I. "General" exposure—external type, i. e., gamma, x-ray neutrons. This produces a "general" systemic reaction.
- II. "Superficial" exposure—external type, i. e., soft energy gamma or x-ray or beta-particle irradiation. Most of the reaction is "superficial" with little "general" reaction.
- III. Induced radiation exposure—external neutrons—reaction is "general" from radioactivity induced by the neutron flux as well as by the neutron damage to tissues.
- IV. Internal contamination. Radioactivity is deposited inside the body.

Management of exposed persons will be in accordance with the type of exposure, as well as the Group under which the patient would be listed in Table III. As stated above, information as to the type of accident and of exposure should not be difficult to obtain, but an accurate dosage estimate may be next to impossible. Thus, the clinician in charge of the patient must use his own medical judgment. Table V lists a suggested procedure.

Table V: "General " Exposures (Groups listed herein refer to Table III)

Early Management

- 1. Good nursing care: all groups.
- 2. High caloric and protein low-residue diet, with supportive vitamins: Groups II and III.
- 3. Fluid and electrolyte balance maintenance (preferably by oral route): Groups II and III.

Late Management (after 14 days, Groups II and III)

- 1. Meticulous nursing care.

Late Management (continued)

2. Adequate diet, modified according to clinical status.
3. Continued maintenance of fluid and electrolyte balance (orally, if possible).
4. Fresh whole blood, if needed.
5. Platelet transfusions if hemorrhagic diathesis is present or imminent.
6. Bone-marrow transfusions (or transplants).
7. Antibiotics if indicated.

It should be noted that Group I patients are not included in this table for late management, as they probably will require no special care after 2 or 3 weeks postexposure time.

The use of antibiotics is outlined in Table VI. As with most other therapeutic measures, common sense and good judgment are most important in deciding what antibiotics to use and when to use them.

Table VI: Use of Antibiotics (Groups listed herein refer to Table III)

1. Prophylactic use not indicated.
2. For Groups II and III culture naso-oropharyngeal washings, stools, and urine. Select broad-spectrum antibiotics for pathogens when demonstrated.
3. When signs and symptoms of infection are present, give large doses of the selected antibiotics.
4. For localized infections use customary hot soaks.
5. Mass casualty situation: Do the best you can with what you have.

Table VII outlines management of the "superficial" type of radiation damage which is similar to that for thermal burns, usually of first or second degree.

Table VII: Management of Superficial Radiation Exposure

1. Good nursing care; sterile technic in dressing areas of vesiculation and weeping.
2. Application of bland lotions (non-oil base) to areas of irritation and weeping.
3. Debridement and/or plastic surgery when needed.
4. Supportive therapy for general systemic reactions; in general, the same as for thermal burns.

This exposure may result from rupture of a reactor core or weapons' casings, radiation fallout, or rupture of sealed sources.

Tables VIII and IX refer to more specific measures required for patients exposed to neutrons and/or for those in whose bodies radioactive materials have been deposited.

Table VIII: Management of the Induced Radiation Case

- I. If dosage is high, measures listed in Table V may be followed.
- II. Adequate measurement of induced radioactivity is necessary, by
 - (a) Whole-body counting
 - (b) Urine, blood, and tissue radioassays

This exposure occurs most frequently during a reactor runaway or "excursion."

Table IX: Management of Cases with Internal Contamination

- I. Proper evaluation of circumstances of exposure.
- II. Attempts to measure "body burden" (whole-body counting and radioassays of urine).
- III. Mobilization of contaminants by chelating agents.
- IV. Removal of contaminants from blood stream by the artificial kidney.

This type of exposure may evolve from ingestion, inhalation, or injection into wounds of radioactive contaminants, resulting from nearly any type of accident.

If a neutron exposure has occurred, it is most likely that there will have been external gamma-ray (photon) exposure as well, and the management would be the same as for the "general" exposure patient.

With induced radiation or internal contamination, certain specific studies should be made that are not required for "general" or "superficial" forms of exposure. These include urine radioassays for induced radioactivity (elements of the body made radioactive by neutron collision, such as Na^{24} , P^{32}) and determination of excretion of internally deposited contamination (Pu^{239} , Sr^{90} , I^{131} , H^3). One of the most important special studies to be performed, as listed in Tables VIII and IX, is the whole-body counting of these patients. By this procedure one can determine the total radioactivity in the body, the types of radioactive materials present, and, quite likely, the organ systems in which this radioactivity has been deposited.

* * * * *

Eaton Agent Pneumonia

CAPT J.R. Kingston MC USN, R.M. Chanock MD, LT M.A. Mufson MC USNR, L.P. Hellman MA, W.D. James and H.H. Fox BS, LT M.A. Manko MC USNR, and CAPT James Boyers MC USNR. J.A.M.A. 176: 118-123, April 15, 1961. *

The confusion that has developed in regard to the antibiotic treatment of "primary atypical pneumonia" is the natural result of the use of a clinical syndrome as a diagnostic entity. This is particularly true when the diagnosis of the entity is dependent upon clinical course and nonspecific x-ray findings. Difficulty in evaluating the effect of therapy is not surprising when it is realized that atypical pneumonia is a syndrome of multiple etiology. In adults, it has been associated with adenovirus, influenza virus, psittacosis, Eaton agent, and Q fever.

In previous chemotherapeutic investigations, etiologic diagnoses were based, in part, upon the results of certain nonspecific and relatively insensitive laboratory tests (cold agglutinins and streptococcus MG agglutinins), and, in general, the etiologic basis for the illnesses under study was poorly defined. In addition, no attempt was made to evaluate the effect of therapy for those patients who were positive only by these nonspecific tests. When taken as a whole,

however, the previous studies suggested that tetracycline chemotherapy was effective in the treatment of atypical pneumonia, associated with a cold agglutinin response.

Recent studies have confirmed the role of the Eaton agent in respiratory disease and have shown that this agent is responsible for the majority of pneumonias associated with a cold agglutinin response. The unique situation existing at the Marine Corps Recruit Depot, Parris Island, S. C., where approximately 70% of pneumonia patients studied over a 6-month period had evidence of infection with the Eaton agent, made it possible to perform a large-scale controlled double-blind study on the efficacy of demethylchlortetracycline in the treatment of primary atypical pneumonia associated with the agent.

Laboratory Procedures. On admission to the study, red and white blood cell counts were performed, and nose and throat cultures were taken on all patients. Two specimens of blood for serologic studies were collected, the first on the day of admission and the second 17 to 21 days after admission. The blood was allowed to clot and the serum was separated by centrifugation at room temperature. The specimens were divided into vials and kept frozen.

The fluorescent antibody technic described in a previous communication was used to demonstrate the development of antibodies to Eaton agent. The sera were tested by the complement-fixation technic with the following antigens: influenza A₂, B, and C; para-influenza 1, 2, and 3; adenovirus; respiratory syncytial; psittacosis virus; and Q fever virus.

Cold agglutinin titers in all sera were determined by the method of Feller and Hilleman with use of 0.2% human "O" red blood cells.

During this controlled epidemiologic study, 68% of 238 cases of pneumonia and 28% of 144 febrile respiratory illnesses were associated with Eaton infection. Infection, as detected by the fluorescent antibody technic, occurred significantly less often (6%) among recruits without respiratory illness. Specificity of the antibody response was established by the recovery of 14 strains of the agent from 17 recruits with serologically positive pneumonia.

Demethylchlortetracycline treatment for 6 days, 2 capsules (300 mg) three times a day, significantly reduced the duration of fever, rales, cough, malaise, and fatigue. Treatment stopped progression and accelerated the clearing of pulmonary infiltration. Fever did not return after cessation of therapy. This finding, plus the effect of treatment upon pulmonary infiltration, strongly suggests a direct action of the drug upon the disease process rather than an antipyretic effect, as suggested by certain authors.

Effects of treatment are consistent with preliminary laboratory studies which indicate that demethylchlortetracycline inhibits the growth of Eaton agent in monkey kidney tissue culture. Complete suppression of multiplication was observed with 1.5 mcg per ml, a level considerably below that maintained in the serum of human subjects 24 hours after oral administration of 0.5 gm of the drug. Eaton has previously shown that a closely related drug, chlortetracycline (Aureomycin) hydrochloride, inhibited growth of the agent in cotton rats and eggs. Treatment had no apparent effect on the course of a small group of illnesses associated with other known respiratory viruses.

In contrast, however, a large residue of undiagnosed pneumonia (122 cases) was beneficially affected by treatment. The effect was less than that observed for Eaton-positive pneumonia. This group may represent a mixture of (viral?) agents, one or more of which was susceptible to demethylchlor-tetracycline and was sufficiently prevalent for an effect of chemotherapy to be detected. The undiagnosed pneumonia occurred earlier in recruit training than Eaton pneumonia. It was most common during the last 4 months of the study, in contrast to Eaton pneumonia which was most common during the first 3 months. In addition, the clinical course was milder and the symptoms were less persistent than in Eaton pneumonia. Development of cold agglutinins in this group was uncommon. This suggests that these infections did not represent serologically unrecognized Eaton pneumonia.

* Department of the Navy, Bureau of Medicine and Surgery, Research Division, Washington, D. C. (CAPT Kingston and Mr. Hellman); Department of Health, Education, and Welfare, Public Health Service, National Institutes of Health, National Institute of Allergy and Infectious Diseases, Laboratory of Infectious Diseases, Bethesda, Md. (Dr. Chanock, Mr. James, and Mr. Fox); Naval Medical Field Research Laboratory, Camp Lejeune, N. C. (LT Mufson) and United States Naval Hospital, Beaufort, S. C. (LT Manko and CAPT Boyers)

* * * * *

Genes and the Pigment Cells of Mammals

Willys K. Silvers, Associate Member, Wistar Institute of Anatomy and Biology, Philadelphia, Pa. Science 134: 368-373, 11 August 1961.

Interest in the genetic aspects of mammalian pigmentation is almost as old as the science of genetics itself; it was only shortly after the rebirth of Mendelism at the beginning of this century that W. E. Castle and his students, at the former Bussey Institute of Harvard University, initiated studies on the inheritance of specific coat-color types in guinea pigs, rats, rabbits, and mice. Although these workers were completely unaware of the anatomical basis and biochemistry of pigmentation, the genetic analyses resulting from their extensive breeding studies established that the production of coat-color pigment patterns involved a local interaction of specific gene products which was relatively unaffected by systemic or environmental factors.

Subsequent investigators produced experimental evidence confirming the belief of some of the older histologists that melanogenesis is the sole prerogative of specialized branched or dendritic cells, now usually referred to as melanocytes, of neural crest origin, which function as unicellular melanin secreting glands in the epidermis. This elucidation of the cellular basis of pigment formation, made little more than two decades ago, set the stage for extensive studies on the physiologic genetics of pigmentation. These studies are directed toward answering the important question of how the genes which

influence pigmentation produce their effects; this forms the principal subject matter of this article.

The genetic aspects of mammalian pigmentation have been more thoroughly worked out in the mouse than in any other species, for two reasons. Large numbers of coat-color mutations—that is, deviations from "wild type"—have occurred in this species, and the requisite stocks manifesting these mutations either are available or can be produced comparatively easily because of the large number of inbred strains in existence. Although most of what follows, therefore, concerns studies on the mouse, it may be emphasized that the general principles illustrated certainly apply with relatively few qualifications to other mammals.

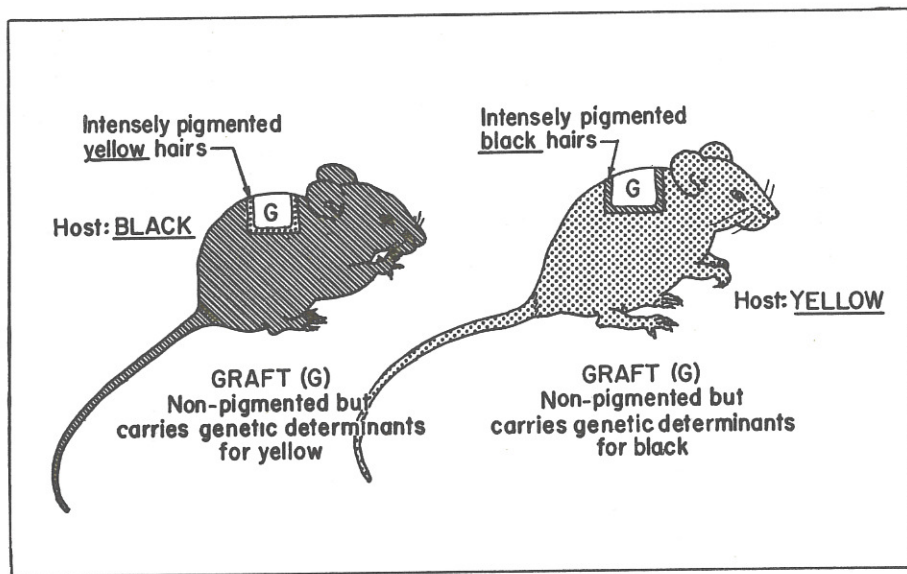


Fig. 1. Intensely pigmented black and yellow mice, grafted at birth with histocompatible skin from newborn genetically yellow (but nonpigmented) and genetically black (but nonpigmented) mice, respectively, exhibit some intensely pigmented hairs within the graft margin when grown. These hairs are pigmented by host melanocytes which have migrated into hair bulbs of the graft, where their functional behavior is dictated by the milieu (agouti-locus genotype) of the graft.

In order to exemplify the many diverse ways in which gene action can influence or suppress pigment production, the author has been mainly concerned in this discussion with analyzing how a few well studied coat-color factors of the mouse produce their phenotypic effect. This analysis demonstrates that melanoblast differentiation and melanin synthesis proceed through an orderly sequence of genetically controlled steps, any one of which can be influenced in various ways. While some coat-color genes are involved in early steps in melanoblast differentiation (W , Mi^{wh} , Sp), melanocyte morphology (D , Ln), or the basic protein structure of the melanin granule (P), others produce their effect by controlling tyrosinase synthesis (C) or the polymerization of melanin (A , B).

Although much work still remains to be done in tracing the phenotypic effects of these specific loci even farther back to the time and place of their primary action, these studies have already contributed much to an understanding of how gene action and interaction can influence a single mammalian character, illustrated in Figure 1 on page 10.

Under references and notes, the author relates that the expense of preparing this article was met by a grant (C-3577) from the National Institutes of Health, Bethesda, Md.

* * * * *

Prognosis in Bell's Palsy

W.B. Matthews MA DM MRCP, Neurologist, Derbyshire Royal Infirmary.
Brit Med J 5246:215-217, 22 July 1961.

The rate of complete recovery in Bell's palsy is often stated to be 80 to 85%, without further support, even by authors whose own results by no means approach this level (Cawthorne and Haynes, 1956; Sullivan and Smith, 1959; Dalton, 1960). Patients referred to hospital must always be selected, and it seems to have been accepted that the lack of agreement between the observed recovery rates and the orthodox 80% is due to many palsies resolving so quickly that the patients are never referred to hospital or, perhaps, never even seen by a doctor. This difficulty can never be fully overcome, but if the assumption is correct, the earlier the patients are seen the better the rate of recovery should be. This is obviously true with patients specifically referred because of delayed recovery, but it is of some importance to establish the prognosis in cases seen within a few days of onset.

To be effective, any treatment must prevent degeneration of the nerve, and it is probable that this could be achieved only early in the course of the palsy. Unless the natural prognosis of patients seen at this stage is known, it is not possible to assess the results. It is claimed that treatment can be effective within the first week (Korkis, 1961), but no satisfactory control series exists for patients first observed within the same period. An attempt was made to obtain a relatively unselected group of patients by an appeal to local practitioners to refer patients early; this paper is an account of the results.

For the purpose of the present investigation, Bell's palsy was defined as a unilateral facial palsy of peripheral type unassociated with other evidence of nervous disease or with otitis media or other discoverable cause. Patients with herpes zoster at the time of the palsy, or later, were included. The time of onset was dated from when the patient first noticed weakness and not from premonitory symptoms. A careful examination was carried out to determine whether the palsy was complete or partial; cases with detectable movement were classified as partial. Electromyography was not available until late in the series, and as the results are not comprehensive they are not mentioned

further. The patients did not go entirely untreated; the great majority were given nicotinic acid by mouth. Galvanism was used occasionally when recovery was delayed and the patient anxious. The patient's progress was observed at intervals, and in most, the final result was noted.

Results were assessed as complete recovery, or in three grades of partial recovery; no instance of persistent complete paralysis was seen. Recovery was defined as complete restoration of voluntary movement without evidence of faulty reinnervation or contracture. The grades of incomplete recovery were defined as follows:

1. Incomplete Recovery with no Disability. —These patients stated that the face was normal, but residual signs could be detected in the form of associated movements. This is a small but important group vitiating the results of studies based on a postal questionnaire (James and Russell, 1951).

2. Incomplete Recovery with Slight Disability. —These patients were aware of faulty movement or asymmetry, but disability was trivial.

3. Poor Result. —These patients had marked asymmetry from residual paresis, contracture, and associated movements.

This grading is arbitrary, but there was little difficulty in assessing the results. It was not possible to obtain sufficient accurate data on the time taken for recovery, and the assessment was made entirely on the final result. The series comprises 155 consecutive patients with 156 Bell's palsies.

Herpes. —Herpes zoster was observed in nine patients, eight with a complete palsy. Only one recovered completely—the patient with a partial palsy.

Recurrent Palsy. —Of the entire series of 156 palsies, 11 were second attacks.

Decompression. —Decompression of the facial nerve in the temporal bone was carried out at the author's request by Mr. R. L. Flett in five patients in whom no movement had been observed after 12 weeks. No dramatic results followed.

The prognosis for complete recovery from Bell's palsy seen within 6 days of the onset was found to be no higher than 65%. The relatively bad prognostic significance of advancing years, a complete palsy, and herpes zoster was confirmed. The effect of selection on the prognosis is discussed, and the necessity for precisely matched control series in the assessment of treatment is emphasized.

* * * * *

Critical Study of Consecutive Wound Infections. One hundred consecutive wound infections have been reviewed by the author. Forty-eight were caused by staphylococci, 49 by enteric organisms, and 3 by beta hemolytic streptococci. Thirty-six strains of the staphylococcal group were not typable. The factors which were most frequently associated with wound sepsis in this series were emergency operations, second operations during the same admission, and the preoperative use of antibiotics. (Peter Dineen, Surg Gynec Obstet, July 1961)

Hiccups Associated with Hair in
the External Auditory Canal

Erminio Cardi, Assistant Visiting Surgeon, St. Joseph's Hospital, Providence, R.I. New Engl J Med 265:286, August 10, 1961.

Termination of hiccups by manipulation of hair in the external ear is presented, to mention yet another seemingly unorthodox treatment for this mysterious malady. The pathologic physiology of hiccups remains largely unknown. Although an attack of hiccups is occasionally seen in association with organic disease, the vast majority of cases occur in apparently healthy people. The condition is believed to result from a reflex mechanism, although attempts to establish the neuroanatomic pathways have been inconclusive. Mixed pathways are suggested, as between the autonomic and phrenic nerves or between the autonomic nerves themselves. Only rarely, are hiccups considered to result from reflexes within the components of the phrenic nerve itself—that is, the cervical nerves.

Satisfactory treatment is lacking. Fortunately, most cases are self-limiting and respond to simple remedies. Manipulation of hair in the auditory canal is a previously undescribed remedy that on further study seems to be based on interruption of a reflex arc.

Case 1. A 35-year old man, in good health, had hiccups that lasted for 7 days and were associated with a weight loss of 4.5 kg (10 pounds). Studies included x-ray examinations of the chest, gallbladder, and gastrointestinal tract, all of which were negative. Many drugs were used without relief. Physical examination at the office was negative except for otoscopic inspection. A single thick long hair was seen extending to the tympanic membrane in the right ear. Manipulation of this hair with a cotton applicator resulted in prompt cessation of hiccups.

Case 2. In a 65-year old man, persistent hiccups developed in the period immediately after an elective cholecystectomy. He was afebrile, and visceral functions had returned to normal by the third day. The usual hiccup remedies failed, and after 4 days he became debilitated. Examination of the left ear revealed a thick long hair extending deep into the external canal. The hiccups promptly stopped on manipulation of the hair with a cotton applicator. A recurrence later the same evening was terminated by repeat treatment.

Most physicians are familiar with the observation that otoscopic inspection of the external ear often results in a cough reflex. Hair pressing on the tympanic membrane is known to be a rare cause of persistent cough. The cough results from stimulation of the auricular (sensory) branch of the vagus. This knowledge prompted inspection and manipulation of the hair in the external ear with such rewarding results. Study of the innervation of the external ear reveals that it is supplied by a sensory branch from the third cervical nerve (via the greater auricular or lesser occipital nerve). The third cervical nerve also contributes to the formation of the phrenic nerve which controls the

diaphragm. Apparently, a hiccup reflex can be set up in much the same manner as the cough reflex.

The author suggests that in these cases a reflex mechanism between the sensory (auricular) branch of the third cervical nerve and the motor (phrenic) branch was responsible for the hiccups, and that manipulation of the hair in the external ear interrupted the reflex.

* * * * *

OXYGEN THERAPY SERVICE
U.S. Naval Hospital, St. Albans, N. Y.

ADDENDUM

NOTE: Since the original article was published in the Medical News Letter on 18 August 1961, describing the new Oxygen Therapy Service of the USNH, St. Albans, N. Y., further information has been received from the Commanding Officer, CAPT P. J. McNamara MC USN, and CAPT Ralph Volk MC USN, Chief of Medical Service of that hospital.

The information is considered to be of potential value to any hospital and is recorded here for the consideration of any Command who might be contemplating the establishment of such a service. —Editor

Sufficient time has elapsed since the establishment of the Oxygen Therapy Service at the U.S. Naval Hospital, St. Albans, N. Y., to evaluate the usefulness and success of such a service.

This department was established because certain deficiencies in oxygen therapy procedures exist at most hospitals and in a hospital as large as St. Albans, they should be corrected as completely as possible. It is well to recount some of these inadequacies.

1. Shortage or complete lack of experienced or trained personnel, both medical officers, nurses, and corpsmen.
2. Improper and inadequate equipment.
3. Shortage of replacement parts and poor maintenance of equipment.
4. Whereabouts of complete functioning units not known when needed urgently.
5. Ineffective therapy because of improper use of equipment, and inadequate follow-up supervision.

The objective of the Oxygen Therapy Service is, therefore, to:

1. Provide and train personnel in emergency cardiac and pulmonary resuscitation.
2. Provide and train personnel in routine oxygen therapy.
3. Maintain, improve, order, and provide proper equipment for ward use on a 24-hour basis.
4. Provide 24-hour consultation service.

The Oxygen Therapy Department was established as part of the Department of Internal Medicine; the Cardiopulmonary Laboratory Division to function conjointly with the Department of Anesthesiology. The staff is comprised of one Medical officer from the Department of Medicine and one from the Department of Anesthesiology. Two hospital corpsmen were selected and trained to work full time on this service. The technicians in the Cardiopulmonary Laboratory were trained and utilized in the watch sections.

A 24-hour Oxygen Therapy Watch was established. A trained technician and a Medical officer constitute an On Board Watch; a Medical officer stands the Supervisory Telephone Watch. The Medical officers standing these watches are members of the Departments of Medicine and Anesthesiology and are familiar with the technics and equipment.

When an emergency such as circulatory or respiratory arrest occurs, a member of the Oxygen Therapy Watch is at the patient's bedside with emergency equipment within minutes. A bag completely fitted with portable equipment and drugs is always ready for immediate use. The bag is rechecked and contents replenished after each use.

The technicians make routine rounds twice daily to assure proper use and working order of the equipment.

All equipment, routine and special, large and small, is inventoried, serviced, and assigned to wards according to the needs. Location of all equipment is index-filed and may be spotted quickly. Equipment is inspected and inventoried monthly. Requests for new oxygen therapy for the hospital are considered and discussed by the Oxygen Therapy Service prior to procurement.

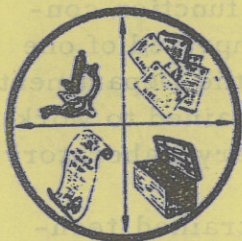
It is important to stress that when an Oxygen Therapy Service is established, it must be available 24 hours every day of the year. This requires a constant supply of personnel, and proper training of new personnel before the old is detached. The maintenance of adequate staff is under the jurisdiction of CDR J. W. Greer MC USN of the Cardiopulmonary Laboratory.

Because of the availability of the Oxygen Therapy Service at the U. S. Naval Hospital, St. Albans, N. Y., there is increased efficiency and effectiveness of such therapy throughout the hospital. There exists wider and greater dissemination of knowledge concerning proper use and choice of equipment. Faulty and useless equipment has been repaired or discarded; maintenance costs have been reduced.

The acceptance of the Oxygen Therapy Service by the entire staff of the hospital has been most gratifying.

Much credit for the success of this special therapy department belongs to two senior residents at this hospital, LT R. B. Moquin MC USN of the Department of Internal Medicine, and LT J. H. Modell MC USN of the Department of Anesthesiology. These officers have spent many hours of enthusiastic planning; they have laid the foundation, and trained the personnel most skillfully.

* * * * *



MISCELLANY

CITATION

The Secretary of the Navy presented with pleasure a Gold Star in lieu of a Second Navy Commendation Medal to Commander Walter F. Mazzone MSC USNR for service as set forth in the following Citation:

"For meritorious achievement while serving with the U. S. Naval Medical Research Laboratory, U. S. Naval Submarine Base, New London, Connecticut from July 1960 to March 1961. Aiding in development of the STEINKE Submarine Escape Appliance—a device which improves the probability of individual escape from submarines by permitting near normal breathing during ascent—Commander Mazzone voluntarily tested the appliance in the Training Tank at New London, Connecticut, by exposing himself repeatedly to high atmospheric pressures with exceptionally short periods of compression and the attendant dangers of nitrogen narcosis, decompression sickness, and air embolism. On 3 March 1961, in waters off Key West, Florida, he assisted in proofing the device during open sea tests from a bottomed submarine at an escape depth of 318 feet—a depth in excess of that for any previously known individual escape. The demonstration of utility from deep depths will improve morale in the submarine service and facilitate the psychological adjustment to individual escape from a submarine. Commander Mazzone's skill, courage, and devotion to duty were in keeping with the highest traditions of the United States Naval Service.

s/ JOHN B. CONNALLY

Secretary of the Navy"

* * * * *

Medical Service Corps Officer Honored

CDR Thomas L. Hollis MSC USN, Administrative Officer of the U. S. Naval Hospital, Philadelphia, Pa., has been advanced to membership in the American College of Hospital Administrators. He is one of two Members presently serving on active duty in the U. S. Navy.

CDR Hollis will receive his official certificate of membership and an acknowledgement of his duties as a Member from the President of the ACHA

Mr. Melvin Sutley. The presentation will take place on 24 September 1961, at a Convocation Ceremony to be held at Convention Hall, Atlantic City, N. J.

CDR Hollis has been stationed at the Philadelphia Naval Hospital as Administrative Officer since July 1958. He received his undergraduate degree from the University of California and obtained his Master's degree in Hospital Administration from the University of Minnesota. He completed his required residency training in hospital administration at the U. S. Naval Hospital, National Naval Medical Center, Bethesda, Md.

* * * * *

BuMed Assistant Chief Visits NAMRU-4

RADM C. B. Galloway MC USN, Assistant Chief of the Bureau of Medicine and Surgery for Research and Military Medical Specialties, visited NAMRU-4 concerning research projects to begin soon, and for evaluation of the current respiratory disease problem in the Navy. He arrived on 10 August 1961 accompanied by the Deputy Director, Research Division, CAPT J. R. Kingston MC USN; the Commanding Officer, Naval Medical Research Institute, CAPT J. R. Seal MC USN; the Commanding Officer, Naval Medical Field Research Laboratory, Camp Lejeune, CAPT G. L. Calvy MC USN; and Dr. Karl Johnson from the National Institutes of Health. The party toured the Great Lakes complex and held a conference with RADM Courtney Clegg, Commanding Officer of the U. S. Naval Hospital, Great Lakes, Ill., and District Medical Officer, Ninth Naval District.

CAPT Lloyd F. Miller MC USN, Officer in Charge, NAMRU-4, and other Medical officers of the area presented a briefing on medical matters in the Great Lakes area requiring research and investigation. The party was also conducted on a tour of the new naval hospital and the facilities of NAMRU-4.

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NAMRU-4 to Commence Pneumonia Research

The Bureau of Medicine and Surgery has assigned a research project to NAMRU-4 for the investigation of viral pneumonia in naval recruits. It is planned to initiate an intensive study of pneumonia this fall and winter. The immediate objective of the project is to further determine the causes of pneumonia and then to explore better methods for prevention and treatment. The study will involve collaboration with the U. S. Naval Hospital and the Medical Department of the Naval Training Center.

Pneumonia in recruits has long been a problem at Great Lakes; it results in a tremendous loss of manhours each year, both by the patients involved and the personnel caring for them. Virologic, bacteriologic, immunologic, clinical, and biochemical aspects of pneumonia will be investigated and

correlated with the epidemiologic factors associated with the disease as it occurs in recruits. The pneumonia rate in recruits is considerably higher than in other military or civilian groups within the Great Lakes area. It is believed that the higher rate is due primarily to the epidemiologic situation prevailing in recruits.

A preliminary conference, attended by representatives from the Naval Hospital and the Medical Department of Administrative Command, was held on 26 July 1961 at NAMRU-4. At this conference, the pneumonia problem was outlined by NAMRU-4, and methods for organizing a collaborative approach were discussed. This conference was held as a preliminary to the recent visit on 10, 11, and 12 August by the Director and Deputy Director, Research Division, Bureau of Medicine and Surgery. During this visit, concurrence was obtained for prompt initiation of the study as planned.

* * * * *

Medical Aspects of Advanced Warfare

This course is designed to familiarize key Medical Department officers with the general characteristics of, and the problems associated with, air warfare systems, with particular emphasis placed on nuclear weapons, missile delivery systems, and medical problems related thereto.

<u>Class</u>	<u>Inclusive Dates</u>	<u>Deadline Date to Apply</u>
61-C	6-10 November 1961	1 October 1961
62-A	21-25 May 1962	1 April 1962

The above scheduled courses will be conducted by the U.S. Air Force at the Medical Service School, USAF, Gunter Air Force Base, Ala.

SECRET security clearance is required on all candidates approved for attendance, and selections will be made on a "need-to-know" priority basis.

In view of the anticipated shortage of travel funds for fiscal year 1962, only a limited number of officers can be authorized to attend the courses on travel and per diem orders chargeable against Bureau of Medicine and Surgery funds. Eligible and interested officers who cannot be provided with travel orders to attend at Navy expense may be issued Authorization Orders by their Commanding Officer following confirmation by this Bureau that space will be available in each case.

Requests should be forwarded in accordance with BUMED INSTRUCTION 1520.8, and comply with the deadline dates as indicated above. All requests must indicate that a security clearance of SECRET has been granted to the officer requesting attendance, and an explanation in regard to his "need-to-know."

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A great country can have no such thing as a little war. —The Duke of Wellington

Naval Institute Announces Essay Contest

The U.S. Naval Institute has announced its 1962 General Prize Essay Contest, open to all military and civilian personnel, with a closing date of 1 November 1961. The top prize in this prestige contest may be as much as \$1500, depending upon the merit of the winning essay. Author of the winning essay will also be awarded a gold medal and a Life Membership in the Naval Institute.

Essays may be on any subject and should be analytical or interpretive and not merely an exposition or personal narrative. They must be typewritten, legible, double spaced, on paper approximately 8-1/2 x 11, in duplicate with each copy complete in itself, and not over 5000 words in length.

The author's name should not appear on the essay. Instead, each essay must carry a motto on the title page. This motto should also be typed on a sheet of paper along with the identification of the author and sealed in an envelope. The same motto should be typed on the outside of the envelope which will not be opened until the Board has selected the prize-winning essay. The essay and identifying envelope must be mailed in a large sealed envelope marked "General Prize Essay Contest."

The results of the contest will be announced, and awards presented to the winners, at the annual meeting of the Naval Institute on Thursday, 15 February 1962. Additional essays may receive "Honorable Mention" with compensation. Essays not awarded a prize may be published in the Naval Institute "Proceedings" and paid for at the regular rate for articles. (TIO, BuMed)

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Directives

BUMED INSTRUCTION 6250.2B

30 June 1961

Subj: Disinsection of naval vessels and aircraft

Ref: (a) G.O. 20

Purpose. To inform addressees of approved procedures and materials for the disinsection of naval vessels and aircraft.

Cancellation. BUMED INSTRUCTION 6250.2A is canceled and superseded.

Scope. This instruction supplements quarantine instructions in reference (a).

General. Disinsection should always be accomplished on leaving ports where yellow fever exists. Special attention should be directed to disinsection of vessels and aircraft proceeding from areas where malaria mosquitoes exist to areas where they do not exist. Particular cognizance should be taken of cargo loaded from plague-infected ports. Specific methods for application, exposure, and special problems are given.

BUMED INSTRUCTION 1520.10B

12 July 1961

Subj: Residency training of medical officers; application for

Purpose. To provide guidelines for the submission of individual applications for residency training and a list of residencies available in naval activities.

BUMED INSTRUCTION 10110.2 CHANGE TRANSMITTAL

26 July 1961

Subj: CH-1 to BuMed Instruction 10110.2, Subj: Hospital Food Service Program

Encl: (1) Revised page C-5 and new pages C-6 through C-8

Purpose. To incorporate instructions for the Food Service Performance Analysis report, MED-10110-2, into the hospital food service program directive.

Cancellation. BuMed Instruction 10110.1A is canceled.

BUMED NOTICE 1510

27 July 1961

Subj: Career incentive available to Group X (Medical) rates

- Ref: (a) BuPersInst 1133.13 of 2 Aug 1960, Subj: Selective Training and Retention (STAR) Program; promulgation of (NOTAL)
- (b) Enlisted Transfer Manual, NavPers 15909, Chapter XII
- (c) BuMed Inst 1510.4F of 28 Feb 1961; Subj: Training available to enlisted personnel of the Hospital Corps, Group X (NOTAL)

Purpose. To supplement instructions contained in references (a) and (b), relative to reenlistment career incentives for hospital corpsman ratings.

BUMED NOTICE 7320

31 July 1961

Subj: Selected production equipment property record cards; submission of copies

Ref: (a) NavCompt Manual Vol. III para 036162-6

Purpose. The purpose of this notice is to obtain data from Navy inventory records for selected items of production equipment.

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From the Note Book

Appreciation for Meritorious Performance. Rear Admiral Edward C. Kenney MC USN, Surgeon General of the Navy, has awarded the following Letter of Appreciation to LT George P. Kane MSC USN.

It has been brought to my attention that you were awarded a Letter of Appreciation by the Chief of Naval Operations, Republic of Korea Navy, on the occasion of your detachment from the U.S. Naval Advisory Group on 20 July 1961. I take pleasure in adding my expression of appreciation for your meritorious performance while serving as Medical Advisor, United States Naval Advisory Group to the Republic of Korea Navy during the period 21 July 1960 to 20 July 1961.

As Surgeon General, it is most gratifying to receive reports of creditable performance on the part of officers of the Medical Department. In this instance, your contributions have reflected favorably on the Medical Department in particular, the naval service in general, and have merited acknowledgement at the highest level of the Korean Navy.

You are deserving of a "WELL DONE" for this accomplishment.

U.S. Group Studying West Indies Nutrition. A federally sponsored team of physicians and specialists has begun a nutritional survey of the West Indies. The Interdepartmental Committee on Nutrition for National Defense is the sponsor. Team director is Dr. Donald M. Watkin of Pan American Sanitary Bureau. Previous surveys under the same auspices have been done in South America, Asia, and Africa. Dr. Frank B. Berry, Deputy Assistant Secretary of Defense (Health and Medical) is Chairman of the Interdepartmental Committee. (Washington Report on the Medical Sciences, No. 739, 21 August 1961, Gerald G. Gross, Editor)

Glaucoma Detection Program. A new plan to speed up the detection of glaucoma in its early stages and thus reduce the toll of blindness was announced today by Dr. Luther L. Terry, Surgeon General of the Public Health Service. In announcing the new plan, Dr. Terry pointed out that early detection and treatment is of utmost importance in glaucoma control. If detected too late, severe sight impairment and blindness are inevitable. From a medical standpoint, the early detection of individual cases of glaucoma is now relatively easy. The problem is that not enough people take the tests regularly. The new plan will collect and move information between the Public Health Service and official and voluntary health agencies throughout the Nation. It will:

(a) Provide the Public Health Service with complete and continuous information on the extent and nature of glaucoma-detection activities across the country; and (b) Provide official and voluntary health agencies with information on the best new methods of early detection of the disease. Another important benefit will be better information on the actual prevalence of glaucoma in the United States. The Public Health Service is now distributing questionnaires available to all State and local health agencies conducting

early-detection programs. The National Society for the Prevention of Blindness will make the questionnaires available to all its affiliates throughout the Nation. Incoming information on the extent, methods, and results of various glaucoma-detection programs will be analyzed by the Public Health Service, and summaries will be issued periodically for the use of health agencies in their glaucoma-detection programs. (Release, PHS, DHEW, August 15, 1961)

Baseline EEGs. Baseline electroencephalograms are now being routinely performed by the Naval School of Aviation Medicine on all aviation training candidates upon entrance into the Naval Air Training Program. An average of 80 such EEGs are run each week. It is hoped this will lead eventually to the saving of down-time in aviators who incur head injuries, by providing a basis for comparison of brain electrical activity before and after, thus reducing obligatory downs until EEG either clears or it is safe to conclude that minor deviations from normal are not connected with the head injury. It is anticipated that the EEG will eventually become a selection criterion by allowing prediction of the likelihood of unconscious episodes under stress of flight. Thus, this would provide a basis for elimination of at least one class of potentially accident-prone aviators.

Admitting Schizophrenic Mothers with their Babies. A unit was set up at Bantstead Hospital, Sutton, Surrey (England), to treat schizophrenic mothers with their babies. When they have their babies with them, the mothers appear to make a better recovery, have a lower relapse rate, and are more likely to look after their babies on return home. (A.A. Baker, et al, Lancet, 29 July 1961)

Calculation of pH with the Use of Venous Blood. A bedside technic for the determination of blood pH is described. The values of venous carbon dioxide content and alveolar PCO_2 can be used to determine the pH by calculation from the Henderson-Hasselbach equation, or alternatively, directly from the nomogram of Van Slyke and Sendroy; pH determined by this technic has a high degree of statistical correlation with blood pH obtained directly by arterial puncture and measured with a glass electrode. (R. B. Ullian, et al, New Engl J Med, 3 August 1961)

Hematoma Induced by Coumarin. The roentgenologic appearance of intramural hemorrhage secondary to anticoagulant therapy has not been previously described despite the relatively frequent occurrence of gastrointestinal and other hemorrhagic complications of such therapy. The roentgen features differ somewhat from those of intramural hematoma caused by trauma, possibly because of its more diffuse nature and/or the absence of clot formation. Although the striking findings are also consistent with inflammatory change in the duodenum, the history and laboratory and roentgen findings readily establish the diagnosis. (J.F. Wiot, et al, Amer J Roentgenol, July 1961)

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RESERVE**SECTION**

Opportunities for Training
(Part II - Concluded from last issue)

Specialist Program

The Specialist Program is the non-pay program of the Naval Reserve, having the mission of providing trained personnel required for phased mobilization in time of war or national emergency, or when otherwise required by law for duty in conjunction with the needs of the regular service.

The Specialist Program consists of the following types of units which are called companies, e. g., Naval Reserve Medical Company:

Bureau of Ships	Intelligence	Ordnance
Censorship	Law	Petroleum
Chaplain Corps	Medicine	Politico-Military
Civil Engineers	Merchant Marine	Affairs
Corps	Military Sea Transporta-	Public Relations
Communications	tion Service	Supply Corps
Composite	Naval Material	Naval Reserve Of-
Dental Corps	Naval Security Group	ficers Schools

All specialist programs, except the NROS Program, are authorized to schedule 24 drills annually. If the unit commanding officer desires to afford members of his unit more training than that offered through the regular curriculum or if the unit desires to undertake a special project or study, which is in consonance with the specialty of the program concerned, additional drills, not to exceed a total of 48, may be scheduled with the approval of the commandant.

Training in the Specialist Program is primarily through the medium of package curricula developed by the program sponsor. In the case of the Medical Program, the program sponsor is the Chief, Bureau of Medicine and Surgery.

Medical Program

The mission of the Medical Program of the Naval Reserve Specialist Program is to provide a force of qualified personnel of the Medical Corps, Medical Service Corps, Nurse Corps, and Hospital Corps which will be available for mobilization in time of war or national emergency or when otherwise

required by law for duty in conjunction with the needs of the regular service.

Naval Reserve Medical Companies are composed of Reserve officers with designators 1915, 2105, 2305, 2905, 8175, 8185, and Reserve enlisted personnel of the Hospital Corps. At localities where a Naval Reserve medical company does not exist, these personnel may affiliate with other programs of the Naval Reserve for which eligible. At locations where units of the Dental Program do not exist, 2205 officers (Dental Corps) and enlisted dental technicians may affiliate with units of the Medical Program, if available.

Interested persons may obtain full information concerning the Medical Program of the Naval Reserve by contacting the district medical officer of the Naval district in which they reside.

Dental Program

The mission of the Dental Program of the Naval Reserve is to provide a trained force of Naval Reserve Dental officers and enlisted dental technicians adequate to the needs of the Navy and immediately available for mobilization in the event of an emergency.

Naval Reserve officers with designators 1925, 2205, 2305, 2905, 8175, and 8185 and Naval Reserve enlisted dental technicians or dentalmen are qualified for affiliation with the Dental Program.

Interested persons may obtain full information concerning the Dental Program of the Naval Reserve by contacting the district dental officer of the naval district in which they reside or by communicating directly with the Dental Division, Bureau of Medicine and Surgery, Department of the Navy, Washington 25, D. C. The information booklet entitled "Navy Programs for Dental Students" is available from any of these offices.

At locations where units of the Medical Program do not exist, 2105 officers (Medical Corps) and hospital corpsmen may affiliate with units of the Dental Program, if available.

Appropriate Duty

The purpose of appropriate duty is to permit the commandants to accomplish certain tasks and functions which are in support of the Naval Reserve and the Marine Corps Reserve. In addition, appropriate duty may permit commandants to accomplish tasks in support of the naval service generally, and to authorize special categories of training for individual Naval Reservists.

Commandants are authorized to issue appropriate duty orders to individuals of the Naval Reserve not on active duty who are qualified to perform the duties required of them, who are in an active status and who are physically qualified for retention in the Naval Reserve. It is the responsibility of the Commandant to determine that appropriate duty performed is of substantial benefit to the Navy generally, and to exercise close supervision over the performance of appropriate duty.

Appropriate duty is performed either with or without pay. Appropriate duty with pay orders may be issued to 2105, 2205, and 2905 for the performance of medical and dental examinations, medical administrative procedures, and instructional duties in support of the Selected Reserve and Marine Corps Reserve, and for participation with drilling units of the Selective Service Programs of other branches of the Armed Forces. This duty is performed at Naval Reserve Training Centers and Facilities, Naval Reserve Electronics Facilities, Marine Corps Reserve Training Centers, and in the case of Selective Service Programs of other Armed Forces, at the unit drilling location.

Medical Department officers serving under appropriate duty with pay orders must accept Type "A" Mobilization Orders requiring immediate reporting to a designated active duty assignment in the event of an attack upon the United States or full mobilization.

Commandants are authorized to issue appropriate duty without pay orders to designated categories of inactive Naval Reserve Medical Department officers for the following purposes in support of the Naval Service generally:

1. To 2105 and 2205 officers for duty as consultants at certain naval activities.
2. To 2105 and 2205 officers for the performance of medical and dental examinations and/or consultations for the Naval and Marine Corps Reserve. One retirement point is authorized for each medical examination or consultation which is completed, recorded, and the report of which is forwarded. One retirement point is authorized for each three (3) authorized dental examinations which are completed, recorded, and the reports of which are forwarded.
3. To Medical Department officers who are faculty members of approved schools of medicine, or hospital schools of nursing conducting a nursing education program of at least three years in length, to function as Commandant's Representative for the purpose of disseminating information to students on the Ensign 1915 Program and the Navy Nurse Corps Candidate Program.
4. To Medical Department officers for attendance at seminars or symposia, where appropriate authorization has previously been granted.

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A Report of Beneficial Active Duty for Training

Following are excerpts from a letter received by the Commanding Officer, U. S. Naval Hospital, National Naval Medical Center, Bethesda, Md., from a Naval Reserve Medical officer following a tour of active duty for training:

"At our last meeting I promised a detailed report of my active duty, just then coming to a close. In preparing it I realize all over again what a valuable and stimulating two weeks it was, and what a wealth of material was placed so freely at my disposal.

There was actually no break in activity from morning until late afternoon. There was always something to see, somebody to meet, questions to ask, ideas to follow through, further orientation in the over-all big picture of Navy Medicine.

I was brought up to date on obstetrical and gynecologic procedures and technics, cancer detection and treatment, and the mechanics and philosophies of hospital and departmental administration. It was, without doubt, a real review session on a crash basis.

Everywhere I was impressed with the intense academic interest, the spirit of cooperation between departments and individuals, the facility of gaining audience or communication with anyone, regardless of position. The clock is certainly the least used instrument in the hospital.

Another thing that deserves mention is the very apparent alertness of all hands. Not once did I ask a question of direction or procedure from any rate or rank that didn't receive an immediate answer that was detailed, to the point, correct, and, above all, courteous.

I returned from active duty filled with fresh ambition and ideas related to both my Navy and private responsibilities. One of the strongest imprints is the fresh realization of the tremendous responsibility that all this group clinical work places on the individual doctor who takes care of the patient, whether he is near to or far from a teaching center.

I have one recommendation to make. This is that every medical officer who is continuing his career in the Naval Reserve should be required to take periodically.... say, every three to five years...., a tour of duty similar to the one I was privileged to have in June.

In conclusion, I wish to thank you particularly for the suggestion you made the morning I reported in to you. Namely, that I should divide my time between the department that was concerned with my specialty in private practice, and a general orientation of items related to hospital administration and Navy Medicine. "

The foregoing exemplifies what performance of active duty for training should accomplish. All medical department activities are enjoined to establish and maintain programs for Reservists on active duty for training which will impart similar feelings of satisfaction and time well spent.

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Tentative convening dates of inactive Naval Reserve staff corps selection boards:

27 Feb 1962

LCDR to CDR (MC, MSC, NC)
CDR to CAPT (MC, MSC, NC)

24 April 1962

LT to LCDR (MC, MSC, NC)
LTJG to LT (MSC, NC)

To be eligible for consideration for selection an officer must have earned an average of 12 promotion points per year in grade, not to exceed 72 points.



PREVENTIVE MEDICINE

Availability of Lyophilized Smallpox Vaccine

A recently developed lyophilized smallpox vaccine has been standardized for military use and is available upon requisition in the Navy medical supply system. It is issued in 10-dose and 100-dose unit packages with diluent for reconstitution and needles:

FSN 6505-656-0497 Smallpox Vaccine, Lyophilized,
10 doses, Unit of issue: package.....Price: \$2.40

FSN 6505-656-0498 Smallpox Vaccine, Lyophilized,
100 doses, Unit of issue: packagePrice: \$7.00

The potency period of the lyophilized vaccine has now been extended to 18 months.

Although the cost of the lyophilized vaccine is greater than the glycerinated vaccine, FSN 6505-160-9000 Smallpox Vaccine, USP, the lyophilized vaccine may be stored at 35° - 50° F rather than in a frozen state and it has a considerably longer potency period. These logistic advantages will reduce the financial losses due to improper storage and expiration of the 3-month potency periods experienced with the glycerinated vaccine. Furthermore, the use of reconstituted lyophilized smallpox vaccine should result in a greater number of vaccine "takes" since the likelihood of using an impotent vaccine will be greatly diminished. (Communicable Disease Branch, Preventive Medicine Division, BuMed)

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Diarrheal Diseases in the U. S. Navy

The Bureau occasionally receives epidemiologic reports describing outbreaks of diarrheal disease. Medical officers and independent duty hospitalmen are encouraged to review the enclosure to BUMED INST 6310.4, which provides instructions for preparation of these reports. Section VII of Chapter 1, Manual of Naval Preventive Medicine, NAVMED-P-5010, provides information which will assist Medical Department personnel in conducting investigations of food-borne illnesses.

Many of the investigations of outbreaks of diarrheal disease appear to be well performed, and frequently the laboratory of the ship, station, or supporting activity isolates a pathogenic organism from samples submitted. In many cases, however, no enteric pathogen is recovered, and the conclusion that the outbreak must be due to viral agents is frequently reached. In a few instances, specimens have been properly collected, handled, and shipped to a laboratory capable of performing virologic studies; often no viral agent can be detected. Virology is a relatively new science, and current technics cannot identify agents which eventually may be associated with many different diseases.

If a laboratory is unable to isolate a possible etiologic agent, bacterial or viral, which may be responsible for outbreaks of diarrheal disease, no conclusion can be reached regarding the specific etiology. In these circumstances, the epidemiologic report should state all the known facts, but to be scientifically correct, the Medical Department representative must conclude that the etiology of the outbreak of diarrheal disease was undetermined.

The failure to isolate a specific bacterial or viral agent from samples submitted to the laboratory does not preclude the possibility that the outbreak was due to inadequate sanitary precautions. The storage, preparation, and serving of food should be analyzed for unsanitary practices. The water supply should be investigated even though water-borne outbreaks are relatively rare. The usual mechanism for transmission of infectious diarrheal disease is fecal-oral; therefore, every possibility of perpetuating the chain must be searched for and eliminated. (CommDisBr, PrevMedDiv, BuMed)

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A Fatal Case of Lindane Poisoning

A case of Lindane poisoning occurred in Bakersfield, California, in an 18-month old white male infant. An insecticide vaporizer utilizing commercial pellets containing Lindane overturned in the back of a family ranch wagon. The child's mother picked up as many pellets the following day as she could find. She then placed the infant on the rear seat and gave him a bottle of milk. He had also had considerable milk at lunch previously. The bottle rolled from the seat at approximately 3 p. m. and the boy crawled down after it. Shortly thereafter the mother noticed him chewing something and found part of a pellet in his mouth. The boy appeared normal so she returned home.

While playing ball an hour and a half later, he suddenly screamed and started to run to his mother. Part way he gasped and fell backward, striking his head on the floor. He was driven to the nearest doctor, having a convulsion on the way. In the doctor's office, he appeared all right but suddenly convulsed again. His stomach was washed out and he was given oxygen, following which he was driven to the hospital, arriving at 5:25 p. m. He had three generalized convulsions during the 25-minute trip and was comatose on arrival. The patient's eyes were in a fixed stare with the pupils widely dilated.

He was in a continuous tetanic-like state with superimposed severe clonic movements during which he screamed out and became cyanotic with irregular respirations. A grain of sodium luminal was given intramuscularly immediately. The stomach was lavaged until the water returned clear. A second dose of luminal was given at 5:55 p.m. and the infant was placed in a croupette with oxygen. The throat had to be suctioned almost continuously. Convulsive movements continued at frequent intervals, accompanied by shrill cries, until 7 p.m. There were no more seizures although there were occasional jerky movements of the arms and legs. The rectal temperature at this time was 103°. Some improvement was noted during the next few hours, but after midnight abdominal distention was observed, there was an occasional generalized convulsion, and the infant was again in a critical condition.

At 2:50 a.m., almost 12 hours after ingesting the pellets, the patient suddenly expired with respiratory and cardiac failure. The toxicologic report following post-mortem examination indicated that Lindane was present in the fat and liver. The stool contained 9.09 milligrams and the stomach contents 420 milligrams. It is obvious that the infant had swallowed more than a half pellet of insecticide. Gastric lavage had been unsuccessful in removing it. Since the lethal oral dose of Lindane is 125 mg/kg and the infant weighed 11.3 kg, the amount he ingested had to be at least 1412.5 mg. It would require at least two of the commercial pellets to yield this quantity. Absorption was undoubtedly facilitated by the milk the infant was drinking. (E. F. Joslin, Asst Pathologist, and R. L. Forney, Attending Pediatrician, Kern County General Hospital, Bakersfield, Calif.; R. W. Huntington Jr, Pathologist, Kern County General Hospital and Coroner's Office, Kern County, Bakersfield, Calif.; and W. J. Hayes Jr, Med Dir and Chief Toxicology Section, CDC, Savannah, Ga. Proceedings of 1958 Seminar, Natl Assn of Coroners, 53-57, 19-23 August 1958, San Diego, Calif.)

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Safety of Malathion Dusting Powder for Louse Control

Human body lice are responsible for the transmission of epidemic typhus and louse-borne relapsing fever. During the second World War such epidemics were stopped for the first time by DDT. Resistance to DDT was noted during the Korean War and powders containing 1% benzene hexachloride (BHC) were successfully substituted. There is now a requirement for other chemicals of low toxicity to man which will kill lice, because of the emergence of strains resistant to BHC.

In view of the low mammalian toxicity of malathion and its effectiveness against lice, the safety to man of a louse powder containing this insecticide was tested. Malathion in talc at concentrations of 0.1, 1, 5 and 10% were utilized. Ninety grams of the appropriate formulation per person were dusted daily over the entire body, exclusive of the head, neck and genitalia for a

period of 8 to 16 weeks (39 individuals). Thorough dusting of the body requires only 25-30 grams of talc. All the remaining powder was sifted into the clothing.

At the beginning and end of his participation, each man was given a careful symptoms review (involving 195 printed questions), a general physical examination, and a variety of laboratory tests (bromsulfalein retention; cholinesterase activity measured several days per week for the first few weeks, and at weekly intervals thereafter; malathion in the urine; and other laboratory tests).

Results of the bromsulfalein test remained normal throughout. Concentrations of 1% and 5% malathion produced no significant change in red cell cholinesterase while 10% malathion produced a depletion which approached, but did not reach, statistical significance. Measurement of the plasma cholinesterase activity showed that no significant change occurred in any person in the experiment.

The excretion of malathion-derived material in the urine is proportional to dosage at the levels studied. Complete excretion of this compound requires only a few days at most. At the end of the experiment, excretion decreased at a rate which reached levels indistinguishable from the blank by the third day.

The conclusions were that malathion is considered safe for the control of human head or body lice, especially since infrequent applications of small amounts of 1% powder are effective. (W.J. Hayes Jr, Chief, Toxicology Section, Technical Development Laboratories, Technology Br, CDC, PHS, Dept of Health, Education, and Welfare, Savannah, Ga.; A.M. Mattson, Chemist, Technical Development Laboratories, Savannah, Ga.; J.G. Short, Dept of Biological Chemistry, University of Utah, Salt Lake City, Utah; and R.F. Witter, Biochemist, Technical Development Laboratories, Savannah, Ga. Bull WHO 22:503-514, 1960)

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Epidemiology of Accidental Chemical Poisoning

Harold Jacobziner and Harry W. Raybin, MS. Activities of the Poison Control Center, New York City, N. Y. Arch Pediat 78:226-233, June 1961.

In New York City, between March 1955 and December 31, 1959, treatment advice was requested from the Poison Control Center for 33,183 persons poisoned by toxic ingredients. Barbiturates were chief offenders with aspirin a close second when all ages were considered. Internal and external medications cause 58% of all poisonings; bleaches, insecticides, rodenticides, and lead constitute great hazards. Nearly 45% of all poisonings occurred in children under 5 years of age though they constitute only 8.3% of the New York City population.

In individuals under 20 years, aspirin is the leading cause of poisoning, accounting for 15%. Barbiturates take second place, being responsible for 3% of poisonings, undoubtedly because barbiturates are used as medication and for suicide attempts in the older person in this age group.

In persons under 20 years, internal and external medications are responsible for over 43% of poisonings. Insecticides and rodenticides cause many poisonings in the younger age group. Children under 5 are highly susceptible and vulnerable. Age 2 was the most dangerous, with age 1 following closely behind. These two ages were responsible for 58.2% of all poisonings in the under 20 age group.

In children under 2 years, poisonings result largely from products obtainable in open places and at low levels, such as under the sink, on the floor, or on low shelves, the major offenders being household products: solvents, rodenticides, insecticides, and lead. As the child grows older, 3 years and above, he becomes more mobile and climbs to higher places; thus, poisonings are more apt to occur from ingestion of medications obtained from the medicine cabinet or on a shelf.

From the multitude of agents involved, five substances were the chief offenders responsible for 30% of all poisonings in persons below 20 years. Elementary precautions taken in handling and storage of medications and chemical products would bring total prevention of poisonings within the realm of possibility. The high incidence of aspirin poisoning clearly illustrates this point. Low cost and sales pressure cause buying in excess of needs followed by careless disposal. Recommendations are that aspirin should be taken only on the advice of a physician and practically kept under lock and key. Any oversupply should be discarded carefully, preferably in the incinerator.

Lead poisoning accounted for 70% of fatalities due to ingestion of toxic materials in children under 5 years. Deaths were also due to methyl alcohol, aspirin, internal and external medications, rodenticides and insecticides, detergents, and furniture polish, with only one death due to plastic bags.

Prevention of lead poisoning is a major problem. A comprehensive study is being made in the "lead belt." Samples from various apartments are tested for lead content; all children under 6 years living there are given a urinary coproporphyrin test. Positive reactors are referred for further investigation and treatment. As a result, more early cases which are amenable to treatment are discovered. The case fatality rate has thus been reduced from 16.4% in 1955 to 7.0% in 1960.

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Eradication of the Screw-worm Fly. The screw-worm fly, a destructive parasite of livestock, has been eliminated from the southeastern states by a fundamentally new method that enlists the reproductive process of the species in its own extinction. Millions of male flies, sterilized by ionizing radiation, were released in the infested area. A search is now underway to find chemical agents that will also induce sterility in an insect species. (Sc Amer, Oct. 1960)

Kala-Azar

R. C. Morris Jr, D.D. O'Brien, and H. C. Gonick. Report of Two Patients Successfully Treated with 2-Hydroxystilbamidine. Amer J Med XXX(4): 624-632, April, 1961.

Kala-azar is an infectious tropical disease most common in Central and East Africa, East India, China, Burma, and the coastal area bordering the Mediterranean Sea. It is also endemic in South America, but patients with overt clinical manifestations are not common. *Leishmania donovani* is the infecting organism and its vector is the phlebotomus sand fly. In most areas man serves as the principal reservoir of infections, but in the Mediterranean area the dog is thought to be a major reservoir. The disease is most common in children and the Mediterranean type is uncommon in adults. Newcomers to endemic areas appear to be particularly susceptible to this disease. A rural location, a ground level habitant, and any condition enhancing contact with the sand fly increase the likelihood of infection in endemic areas. Therefore, it is plain that American servicemen quartered in temporary housing in rural areas and taking part in training exercises in these areas would be especially susceptible to infection.

According to Shattuck, the usual incubation period is 2 to 4 months. There are, however, reports of patients in whom incubation periods ranged from under 10 days to 34 months. The disease may be abrupt or insidious in onset. It commonly presents like, and is misdiagnosed as, malaria since double and triple diurnal rapidly remitting fever spikes (103° to 104° F) are apt to dominate the clinical picture. More commonly the onset is gradual. As in malaria also, there are usually associated chills and sweats; unlike malaria, however, debilitation does not usually occur, at least early in the course of the disease. One of the most striking characteristics of the disease is the disparity between the subjective feeling and clinical appearance of the patient and the objective severity of the disease. In both the authors' patients, the observation was repeatedly made that, while undergoing a paroxysm of fever, the patients had no particular complaints and did not appear uncomfortable. The appetite is usually not markedly impaired, but there tends to be a steady loss of weight.

With chronicity of the disease, the patient becomes more or less emaciated. Generally, the skin is pale but in many cases is said to become a peculiar dusky grey color which is the basis for the native name, kala-azar, the black disease. According to Manson, this color is best seen on the feet, hands, and abdomen in Europeans, although it is difficult to distinguish in dark skinned natives. According to Napier, pigmentation may be markedly intensified on the forearms and temples in darkskinned people, but not in white skinned people. In neither of the patients studied, and in none of the thirty American servicemen with kala-azar reported on by Most and Lavietes was there a change in the color of the skin.

Generalized lymphadenitis is common. In soldiers who contracted kala-azar in Sicily and North Africa in 1943, several showed only lymphadenitis; the cervical area was most prominently involved. Examination of the chest and heart is usually noncontributory. Splenic enlargement is present from the start and commonly becomes extreme. Napier describes the spleen as having soft doughy consistency, and states that, unlike malaria, it does not become hard with chronicity. In one of the authors' patients, a spleen extending to the iliac crest was missed initially because of its soft spongy quality. The liver is frequently somewhat enlarged. Neither the liver nor the spleen is especially tender. Edema of the lower legs and feet is a common finding and usually reflects lowered serum albumin.

Anemia and leukopenia are invariable in well established cases. The anemia is of no consistent type. Reticulocytes are usually increased. According to Manson, the leukocytes are reduced to below 3000 per cu mm in 95% of patients, below 2000 in 73%, and below 1000 in 42%. The tendency towards agranulocytosis accounts for increased susceptibility to secondary infections. There is usually a relative lymphocytosis. The platelets are moderately decreased. Sen Gupta believes that the leukopenia, anemia, and thrombocytopenia are the result of hypersplenism. The reported increase in red blood cell count in response to epinephrine (injected) is consistent with this idea.

Characteristically, there is a diminution of the serum albumin and an increase of serum globulin. The globulin elevation is in large part due to elevation of the gamma fraction (euglobulin). The gammaglobulin elevation tends to increase with chronicity and levels of 6 gm are not uncommon. (One gm is the usual average normal.) The cause of the gammaglobulin alteration and elevation is not well understood. Because of the common association of hypergammaglobulinemia and diseases associated with disturbances of the reticuloendothelial system, a cause-effect relationship is thought to exist. Tuberculosis, lymphogranuloma venereum, and sarcoidosis are such diseases. There is good evidence that the plasma cell is the principal site of origin of gammaglobulin. Proliferative disorders of the reticuloendothelial system, associated with hyperglobulinemia and hypergammaglobulinemia in particular, such as plasma cell myeloma, chronic lymphocytic leukemia and Waldenstrom's macroglobulinemia, are almost invariably associated with plasmacytosis of the bone marrow. Conversely, plasmacytosis of the bone marrow from any cause is usually associated with hyperglobulinemia. Reticuloendothelial proliferation would then appear to effect hyperglobulinemia by way of a plasmacytotic mechanism.

The morphologic pathology of kala-azar is consistent with this idea. The basic pathologic disorder of kala-azar is phagocytosis of the infecting *Leishmania donovani* and hyperplasia of the reticuloendothelial system. This is best seen in the spleen, liver, and bone marrow. Microscopically, the spleen shows masses of parasites packed in numerous large mononuclear phagocytes; plasmacytes and lymphocytes are also quite numerous. The reticuloendothelial cells of the liver, the Kupffer cells, similarly contain many

parasites. Examination of the bone marrow may reveal numerous parasite-containing phagocytes, occasional parasite-containing myelocytes and polymorphonuclears, and increased numbers of plasma cells. The phagocytized parasites are known as *Leishmania donovani* bodies. Identification of these bodies establishes the diagnosis. The spleen most frequently yields *Leishmania donovani* bodies; the liver and bone marrow are next in frequency.

Until 1939, antimony compounds constituted the only consistently effective treatment for kala-azar. At this time, stilbamidine was introduced and used successfully for the treatment of kala-azar, even in patients who had been refractory to antimony treatment. Because of serious neurologic and renal complications, the drug has been used with considerable reluctance. In 1948, a new stilbamidine compound, 2-hydroxystilbamidine, was first used successfully by Sen Gupta in the treatment of kala-azar. Since that time, Sen Gupta has had marked success with hydroxystilbamidine in a large series of patients with virtual freedom from complications of therapy. Of particular importance is the fact that there has been no report of the curious trigeminal neuritis associated so frequently with the use of stilbamidine. Moreover, stilbamidine has been used successfully in cases of the Sudanese variety of kala-azar, a type notoriously resistant to antimony therapy.

The authors' first patient, who was judged to have had the Sudanese variety of kala-azar because of his location in Eritrea was, therefore, treated with hydroxystilbamidine. The results were altogether satisfactory. Because of success in the first patient, hydroxystilbamidine was also used in the second patient, and with equal success.

It is of note that the elevated gammaglobulin in the first case had not diminished when eradication of the infecting organisms had been demonstrated by biopsy. A continued rise in serum globulin for some time after institution of treatment and apparent successful clinical response can be noted in Stone's case and in three patients reported on by Most and Laviates. Sen Gupta believes that the continued presence of blood congestion in the spleen serves as a continuing stimulant to reticuloendothelial activity and continued hypersplenism. If there is such a continued reticuloendothelial stimulation, this could explain a continuing hyperglobulinemic response.

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Effect of Sabin Type 1 Poliomyelitis Vaccine

The newborn subjects of this investigation were recruited from a population with a high degree of naturally acquired immunity to poliovirus Type 1 that was reinforced by vaccination of the majority of mothers with Salk vaccines. Nonetheless, 81% of the newborn infants were found to excrete virus, and at 7 months at least 50% were serologically immune as determined by the extremely strict criteria discussed in this article. If the serologic data had been based on a half life of 30 days with a 4-fold range in laboratory error—which are the criteria employed by others—66% would be considered immune.

In contrast are the results in babies fed an amount of virus 30-fold less at 3 months. Ninety-three percent of these infants excreted virus, and in approximately the same percentage active immunity developed. Thus, in this population the newborn period is not the ideal time to immunize with a live poliovirus vaccine. However, the infants who did not acquire passive protection from the mother or whose protection was short lived became actively immunized with few exceptions.

The amount of virus administered to the newborn infants was a hundred times that recommended by Sabin for immunization of older persons. In this study, a large dose was selected because it was anticipated that the newborn infant might be relatively resistant. However, data from the authors' laboratory as well as limited observations of Krugman et al (1961), and preliminary observations of Gelfand and associates (1960), indicate that one-tenth of this dose is equally effective. The authors point out that even with the large amounts of virus given, none of the vaccinated infants displayed the slightest evidence of ill-effects either acutely or over a period of approximately a year of close observation.

One of the major aims of this study was to obtain information concerning the effect of passive antibody upon the susceptibility of the gastrointestinal tract to infection. The answer seems to be clear and unmistakable that passive antibody inhibits infection of the bowel and that the effect is directly proportional to the amount of antibody present in the blood. In infants, little or no inhibition is evident until the antibody titer exceeds 128. Above this level the effect is readily demonstrable, but even at titers of 1024 or higher it is not complete and some infants were still capable of contracting infection. These findings are in accord with those of Bodian and Nathanson (1960) in chimpanzees. They reported that in these animals gastrointestinal infection with polioviruses could to a great extent be prevented by serum titers of passive antibody of 500 or higher. On the other hand, Koprowski et al (1956) and Pagano et al (1961) concluded that passively acquired antibody did not interfere with the establishment of infection in infants. The viruses used by these investigators were not the same as the ones employed in this study. Nonetheless, it seems likely that the discrepancy in results is explainable on the basis of the limited number of infants observed by them, relatively few of whom had high titers of antibody at the time they were fed. In several reports, including some from the authors' laboratory, the inhibiting effect of circulating antibody upon gastrointestinal infection with polioviruses was questioned since no difference had been found between the susceptibility of persons who had received Salk vaccine and those who had not. Only pharyngeal infection seemed to be reduced by Salk vaccination. In the light of the data presented in this article, it seems warranted to speculate that the failure of Salk vaccination to reduce significantly the incidence and degree of infection of the bowel can probably be ascribed to comparatively low antibody titers induced in the persons studied, many of whom were incompletely immunized.

It appears that the most important reason why newborn infants are less readily infected than older persons is that they have higher titers of

serum antibody. An additional factor, limiting susceptibility, may be provided by breast feeding. The finding that breast milk from a mother with an antibody titer greater than 128 may inhibit gastrointestinal infection is of theoretical and practical interest. This observation needs extension, but already additional data that agree have been accumulated in this laboratory.

As expected, there was good correlation between establishment of gastrointestinal infection and development of serologic immunity by the infant. This correlation was not perfect, and a number of babies were shown to excrete virus for a significant time but failed to produce antibodies. This was more frequently seen when the passive antibody titers were high and did not occur when they were absent. The conclusion is drawn from these data that passive antibody is apparently capable of preventing active immunization even though the antigen is present in large amounts in the gut. The mechanism by which this effect occurs is not known, but in some way the antigen must be denied access to the cells that form antibody.

It was encouraging to the authors to note that the levels of antibody achieved by the newborn infants who did respond were in good titer and as high as those noted in the 3-month old babies. When the effect of the maternal antibody is removed, the newborn subject did not appear to be significantly different from the older infant in his ability to respond immunologically or to sustain an active infection of the bowel. It is apparent that if immunization with attenuated poliovirus vaccine is undertaken during the newborn period, it should be repeated during the first year. (M. L. Lepow, R. J. Warren, N. Gray, V. G. Ingram, and F. C. Robbins. Effect of Sabin Type 1 Poliomyelitis Vaccine Administered by Mouth to Newborn Infants. *New Engl J Med* 264(21):1071-1078, 25 May 1961. CommDisBr, PrevMedDiv, BuMed)

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Food Borne Outbreaks of Unknown Etiology

Morbidity and Mortality. Public Health Service, U. S. Department of Health, Education, and Welfare, Communicable Disease Center, Atlanta, Ga., Vol. 10, No. 28, 21 July 1961.

So far this year, 25 outbreaks of food borne disease, the etiology of which could not be determined, have been reported in the United States.

Common to most of these outbreaks is the incrimination of a meat product, and an incubation period falling in the range of 6 to 24 hours. The majority of the outbreaks were associated with establishments preparing food on a mass basis; in most instances, the food had been kept in warming devices for varying extended periods of time.

The epidemiologic characteristics described for many of these outbreaks are those most commonly associated with outbreaks caused by *Clostridium perfringens*, an organism annually implicated in a number of outbreaks in England but infrequently incriminated in this country.

DENTAL**SECTION**Open Letter to All Naval Dental Personnel

The numerous reports of anniversary celebrations necessitate the use of an open letter to express my sincere appreciation to those who enthusiastically and appropriately noted the advent of the forty-ninth anniversary of the founding of the U. S. Naval Dental Corps.

The outstanding commemorative celebrations throughout the many naval activities were highlighted at the Naval Dental School by a combined anniversary celebration and the premiere of one of the most recent Dental Corps training films, Oral Hygiene. The enthusiastic support in observing the anniversary of our Corps is only one of the many ways in which the dedicated efforts of our officers and technicians have contributed to an outstanding record of accomplishments in the profession of dentistry.

I am confident that the anniversary celebrations contributed significantly in enhancing public respect for our profession and the Navy. It is a pleasure for me to express this "Well Done" to you.

s/ C. W. SCHANTZ
Rear Admiral DC USN
Chief, Dental Division

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Effect of Various Procedures on Human Dental Pulp**Conclusions**

1. Cavity preparation may be carried out without causing reactions in the pulp.
2. If the water spray of the engine in question is insufficient, odontoblast nuclei will migrate into the cut dentinal tubules; if zinc oxide-eugenol is subsequently inserted into the cavity, an acute inflammatory reaction will occur and under some circumstances develop into a chronic inflammatory reaction.
3. Insertion of gutta-percha in cavities in the dentine resulted in inflammatory reactions in the pulp tissue, characterized by odontoblast nuclei in the

dentinal tubules, neutrophilic leukocytes, lymphocytes, plasma cells, macrophages, and circulatory disturbances.

4. Using gutta-percha as an underfilling and closing the cavity with amalgam or zinc oxide-eugenol resulted in similar reactions.

5. Application of a liquid liner (Unifolan, Pulpdent, Copalite, chloro-percha) provided a certain protection, but this is not considered sufficient.

6. A thick layer of zinc oxide-eugenol was a reliable liner by which harmful effects were avoided.

7. There was no difference in pulp reactions following the use of base plate gutta-percha or of temporary stopping.

8. New formation of odontoblasts was not observed.

9. Regeneration of injured pulp tissue did not take place.

10. The acute inflammatory reaction subsided and left a more or less extended scar tissue and chronic inflammation. (Kaare Langeland, PhD, Oslo, Norway. Oral Surg, Oral Med, Oral Path 14:210-233, February 1961)

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Studies on the Inheritance of Dental Caries

A crossbreeding experiment was conducted with the Harvard caries-susceptible and caries-resistant strains to determine the relative influence of the father, the natural mother, and the nursing mother upon the caries activity of the offspring. The same adults of the two strains with appropriate matings were used for production of preexperimental and postexperimental purebred controls and for production of crossbred offspring. A comparison was made of dental caries experiences of 103 purebred caries-resistant rats, 83 purebred caries-susceptible rats, 262 representatives of the cross of susceptible males by resistant females and 178 representatives of the cross of resistant males by susceptible females. The individual caries experiences within the crossbred groups covered a broad and continuous spectrum from high caries-susceptibility to high caries-resistance. The later in the experimental period that grossly visible carious lesions developed, the fewer lesions were initiated and the less rapidly they progressed. The average dental caries experiences of the rats from both crosses were similar. The average dental caries experiences of the two populations of crossbred rats were significantly higher than for purebred rats of the caries-resistant strain and significantly lower than for purebred rats of the caries-susceptible strain. The male and female parent exerted about equal influences upon the caries activity of the offspring, while the nursing mother had relatively little, if any, effect. (J.H. Shaw and D. Griffiths, Harvard School of Dental Medicine, Boston 15, Mass. Studies on the Inheritance of Dental Caries in the Harvard Strains of Caries-Susceptible and Caries-Resistant Rats. Arch Oral Biol 3:247-257, 1961)

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Personnel and Professional Notes

New Navy Training Film - Oral Hygiene. On 22 August 1961, the 49th anniversary of the U. S. Naval Dental Corps, the new Navy training film, Oral Hygiene (MN-8952), received its premiere showing at the National Naval Medical Center, Bethesda, Md.

This training film was produced for the Naval Dental Corps as another link in its preventive dentistry program. It is intended to be used for viewing by groups of any size to illustrate in a simple brief manner the proper methods of oral hygiene; to provide motivation for personal oral care; and to offer information on additional aspects of preventive dentistry. The story is narrated in a most interesting manner, and tells a story in such a way that the viewer's interest is held throughout the film.

Oral Hygiene was produced by the American Film Producers of New York for the Naval Dental Corps through the Audio-Visual Section of the Bureau of Medicine and Surgery.

Many scenes were filmed at the U. S. Naval Dental School, NNMC, Bethesda, Md., utilizing staff members along with a professional actor. Technical advisors for the film were: Mr. C. A. Green Jr, CAPT H. J. Towle Jr, DC USN and CDR P. C. Alexander DC USN.

Naval Dental Corps Continuous Education Program. A postgraduate course in High Speed Orientation will be conducted 13-17 November 1961, at the U. S. Naval Dental School, NNMC, Bethesda, Md. This course will consist of lectures, seminars, demonstrations, and laboratory procedures on extracted teeth. All types of high speed equipment, including the new air and water turbine handpieces, will be employed. Proper utilization of carbide burs and diamond stones and sterilization of equipment will be included.

CAPT C. L. Bohn DC USN will be the instructor. Quotas for the course have been assigned to the following Naval districts and commands: COMONE, COMTHREE, COMFOUR, COMFIVE, COMSIX, COMNINE, PRNC, SRNC, and CNATRA. Applications should be received in the Bureau of Medicine and Surgery as early as possible and preferably not less than 4 weeks prior to commencement of the course. The Bureau Professional Advisory Board will make recommendations on all requests; upon approval by the Surgeon General, applicants will be notified as to the final action. Those approved will be nominated for TAD or authorization orders, as appropriate. Accounting data will be forwarded to individual officers nominated for TAD orders.

Drs. Pankey and Mann Lecture at NDS. Drs. L. D. Pankey DDS, Coral Gables, Fla., and A. W. Mann, BS, DDS, Fort Lauderdale, Fla., discussed their concepts, technics, and some basic fundamentals in oral rehabilitation. They described and demonstrated the use of the Pankey-Mann instrument. The discussion included the philosophy of treatment in patient-dentist relationships. Dental officers of the Armed Forces, civilian dentists, and other interested scientific personnel in the Washington, D. C., area were invited to attend.

Training Publications for Advancement in Rating, NAVPERS 10052-H. This pamphlet is the basic reference to training courses and publications which dental technicians should study. Your personnel office, I & E office, or ships office will have a copy of this publication. On page 46 are listed the minimum publications which dental technicians should study for advancement in rating. It should be remembered that, in some cases, only parts of the books listed will apply to each particular pay grade. The most intelligent use of these books will be in conjunction with the Manual of Qualifications for Advancement in Rating, NAVPERS 18068.

Dental Research Seminars Conducted at NDS. Dental Research Seminars are conducted periodically at the U. S. Naval Dental School, NNMC, Bethesda, Md. These seminars provide an opportunity for personnel engaged in dental research at both the Naval Dental School and the Naval Medical Research Institute to present reports of their work. A period is devoted to discussion and critique following the presentations. The seminars provide a means of disseminating information regarding research tasks currently under investigation, and tasks proposed by the Naval Dental School and Naval Medical Research Institute.

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POSTAGE AND FEES PAID
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